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(54) Production from and Servicing of Wells

(57) A system selectively permitting production from and servicing of a plurality of wells 12, 12*a*, 12*b* has a common production flowline 13 and at least two service lines 14, 15. The production flowline 13 and service flowlines 14, 15 are connected in parallel with each well. A production tubing string, contained within each well, can communicate with or be isolated from the common production flowline 13. The service lines 14, 15 can be used selectively to direct a tool string or treating fluid to a production tubing string in each well. While one well is recieving treating fluid from the service lines 14, 15, or pump down operations are being performed in it, the remaining wells in the system can continue to produce through the common production flowline 13.

A method of servicing wells is also disclosed.

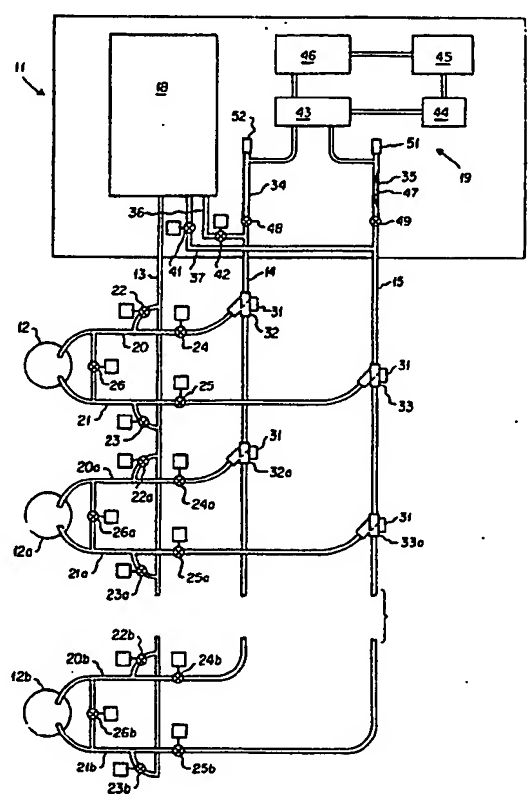

FIG. 2

The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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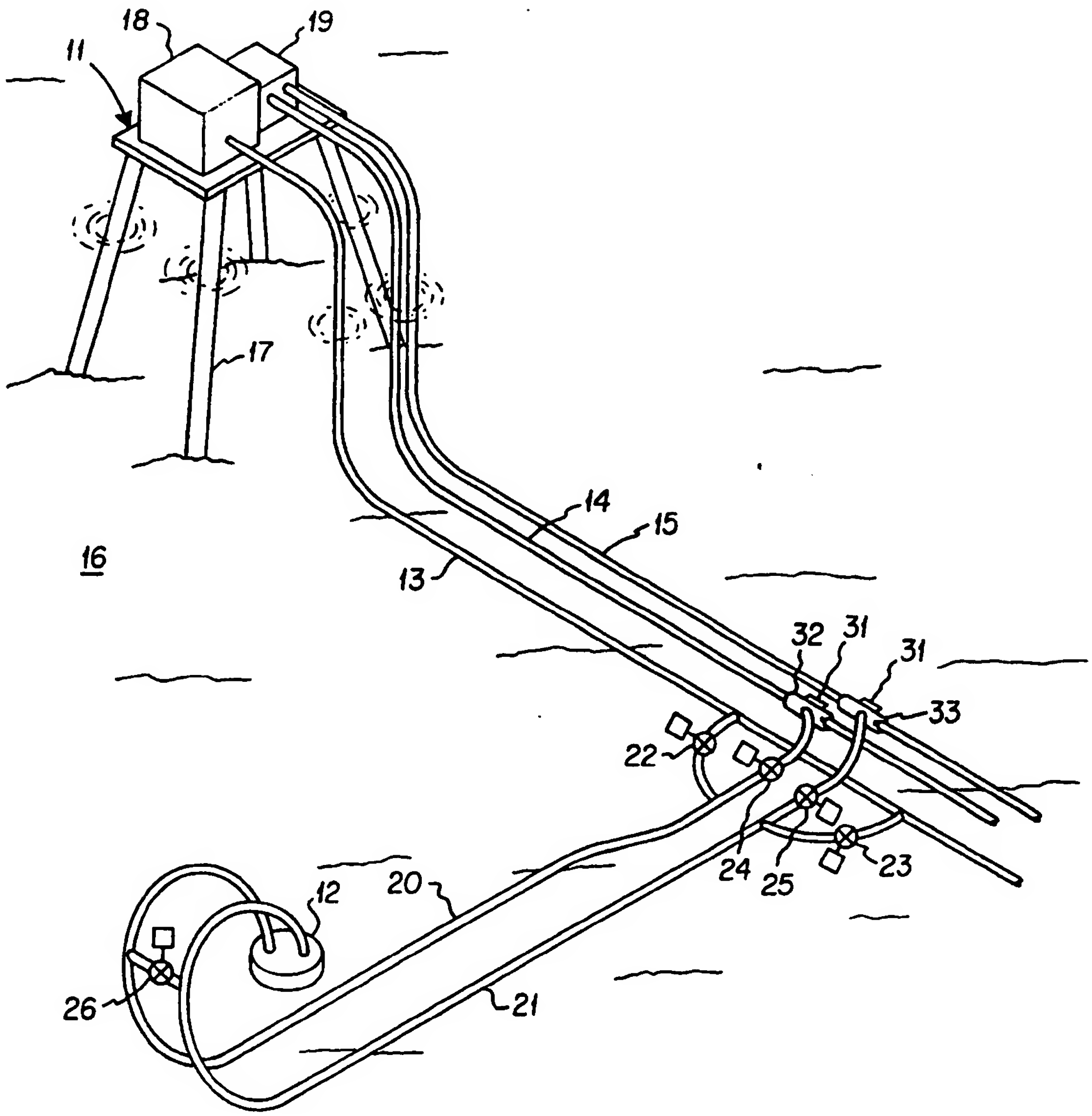

FIG. 1

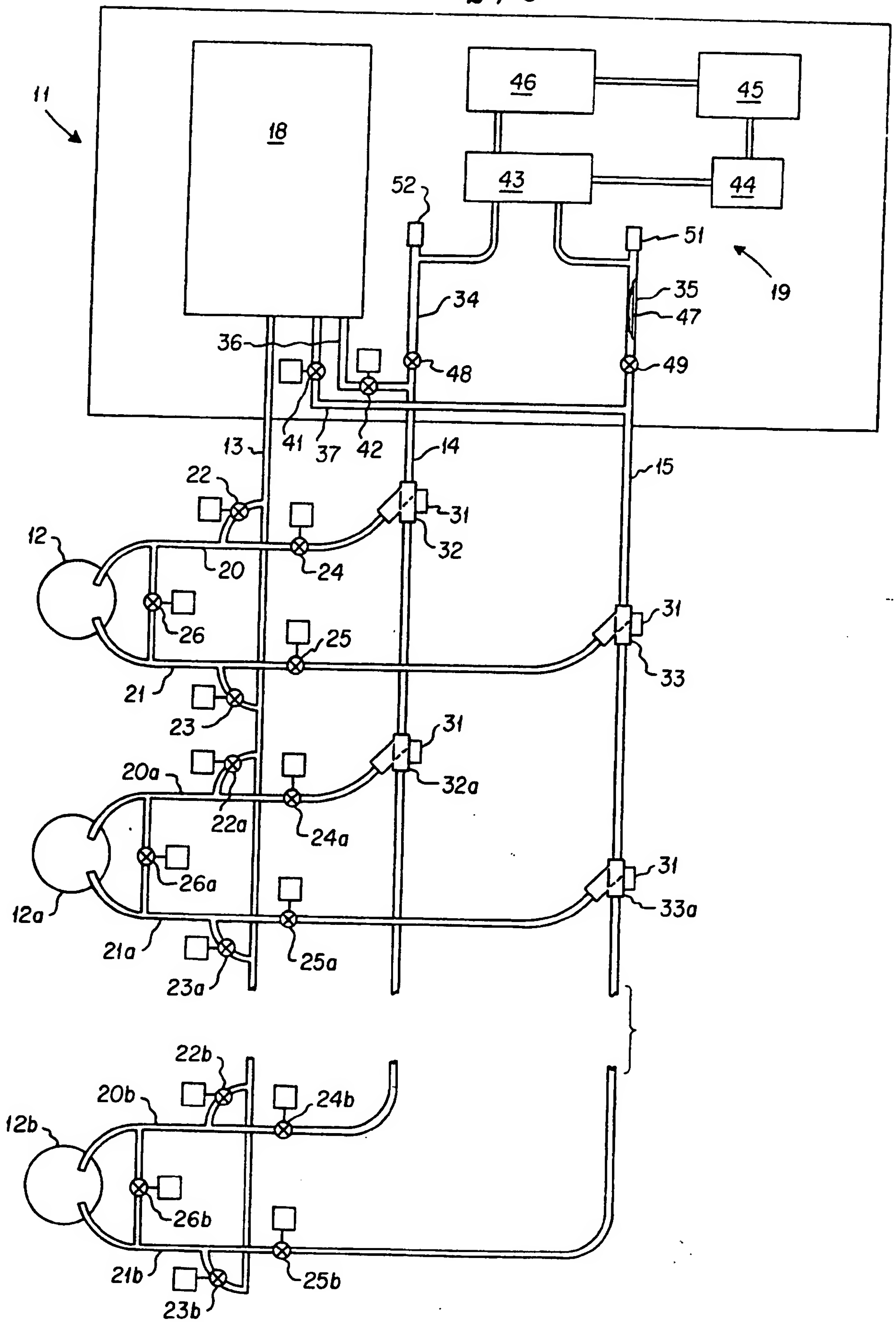
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FIG. 2

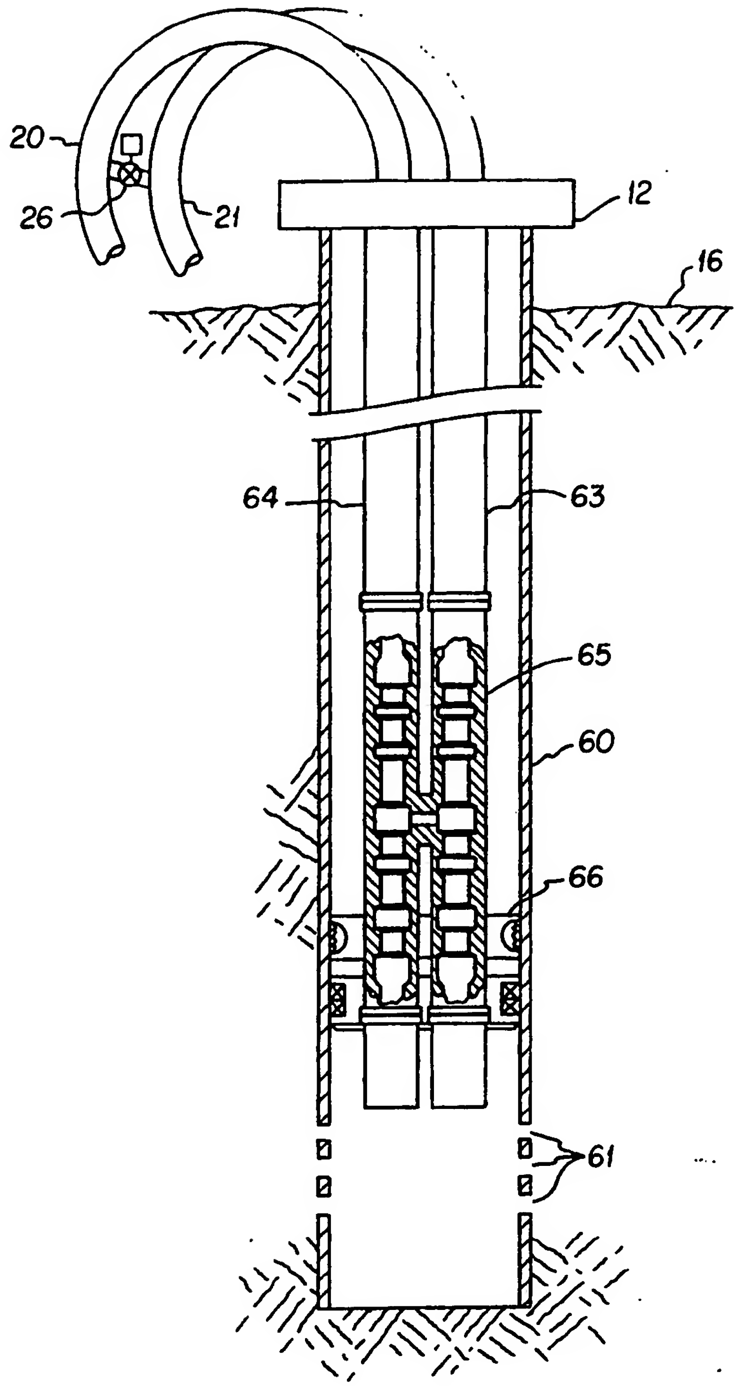

FIG. 3

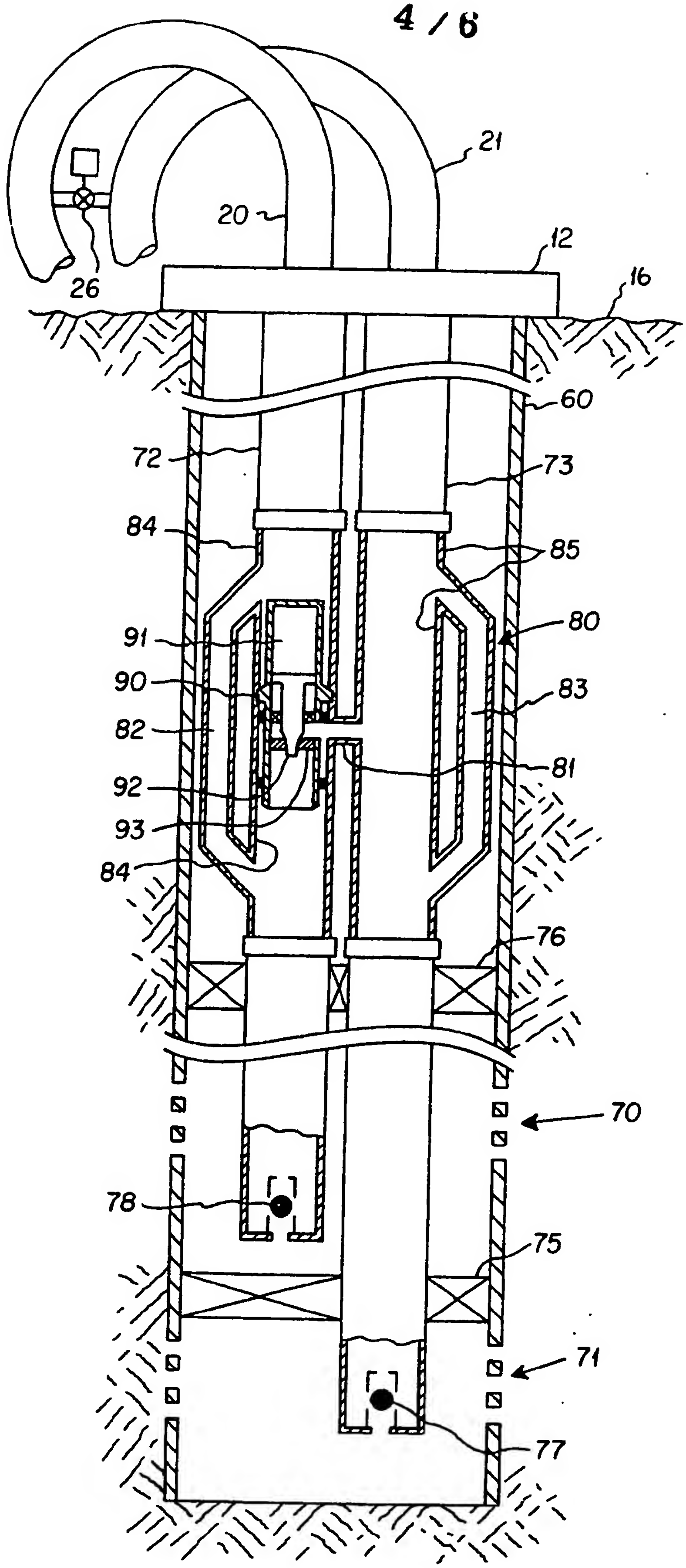
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FIG. 4

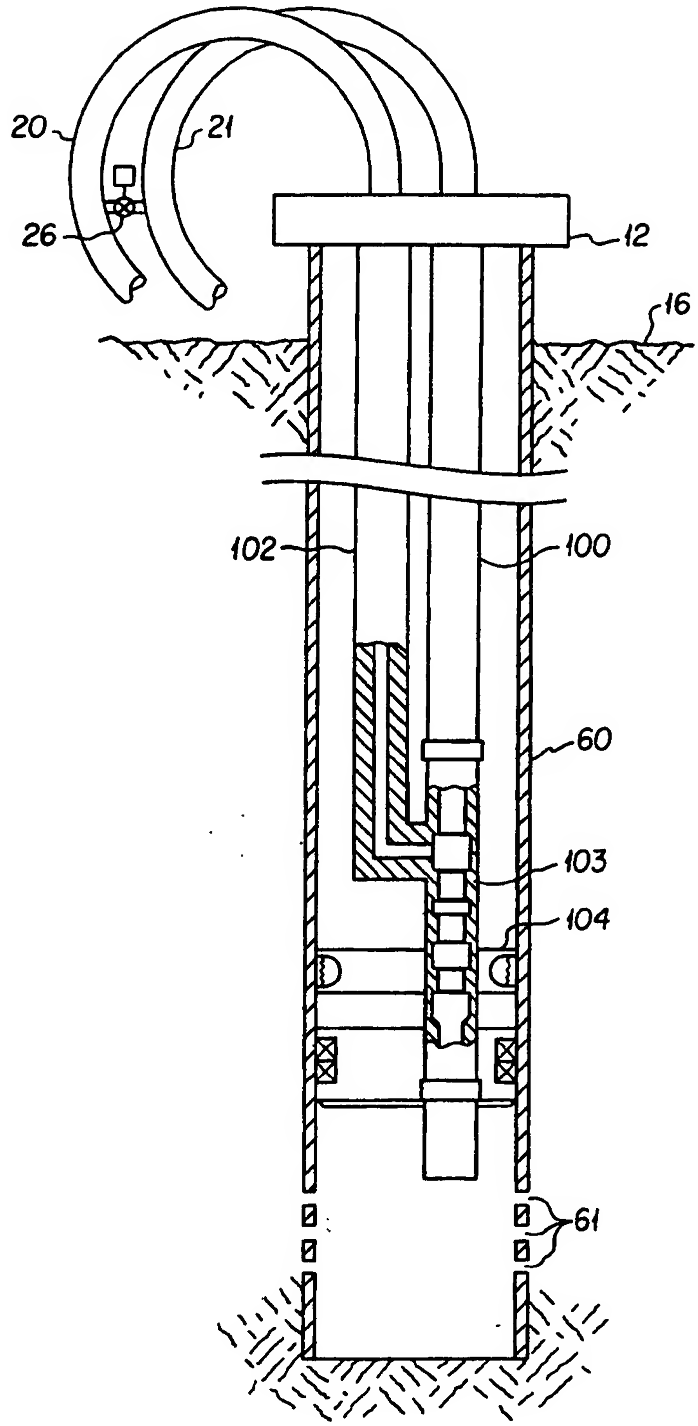

FIG. 5

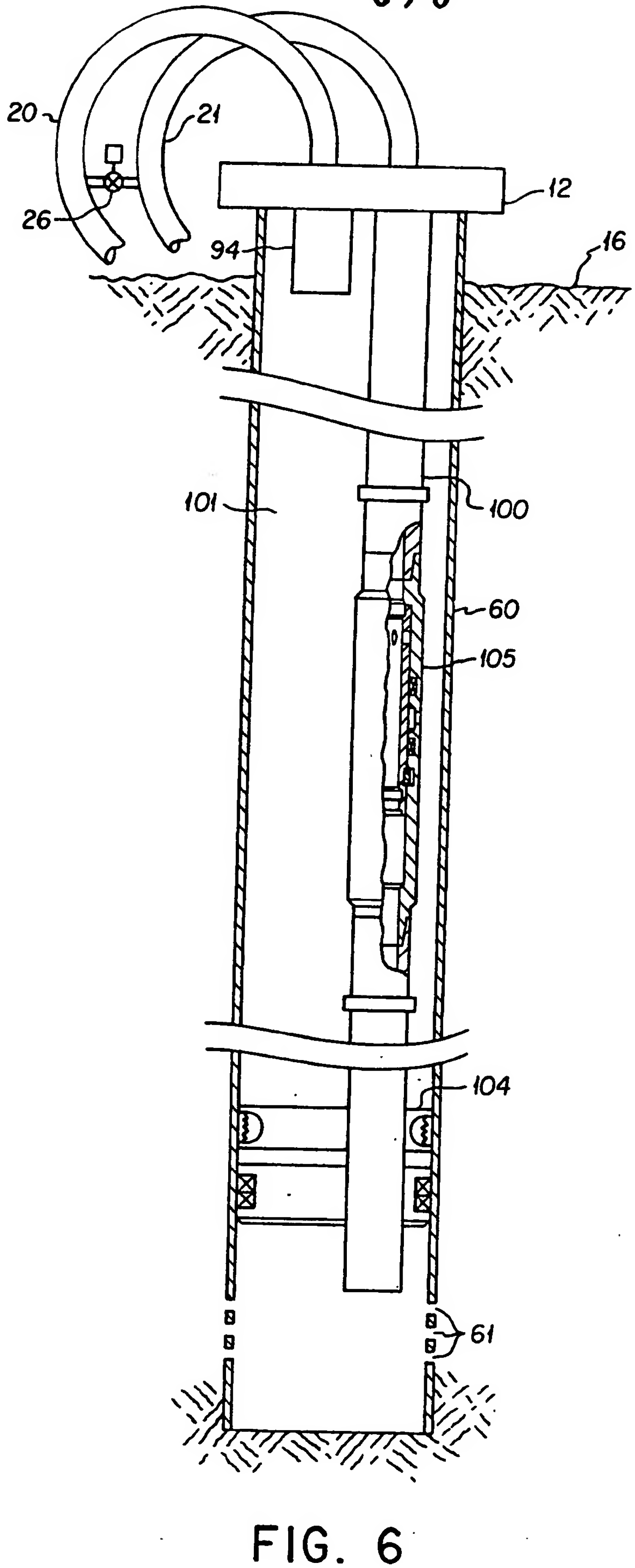

FIG. 6

SPECIFICATION

Production from and Servicing of Wells

The present invention is directed to a system selectively permitting production from and servicing of a plurality of wells. The system enables one of the wells to be serviced while continuing to produce from other wells covered by the system.

In order economically to produce from and service offshore wells, multiple satellite wells are frequently connected to a single production platform. The satellite wells are sometimes serviced by "through-the-flowline" (TFL) or pumpdown tools for performing functions such as paraffin scraping, sand washing, downhole safety valve installation, and gas lift installation, within a production tubing string. Pumpdown servicing requires at least one production tubing string disposed within each well and a fluid cross connect or circulation device intermediate the ends of the production tubing string. Preferably, two production tubing strings and a cross connect or H member are utilized to ensure a fluid circulation path for movement of the TFL or pumpdown tool string from the surface servicing equipment to the desired downhole location. A very common technique is to have two separate flowlines from each satellite well running along the ocean floor to the production platform. Therefore, if the production platform is located in a field having fifteen wells, thirty flowlines are required.

Many systems have been proposed to eliminate the cost of laying separate flowlines on the ocean floor to connect individual wells with a production platform. U.S. Patent No. 3,366,173 to D. F. McIntosh discloses a system for producing from multiple wells through a central facility. However, servicing the wells requires a workover boat and vertical access to each well.

U.S. Patent No. 3,401,746 to L. C. Stevens, et al, discloses a system for producing from multiple wells through a central underwater facility but requires separate flowlines connecting each well thereto.

U.S. Patent No. 3,444,927 to T. W. Childres, et al, discloses a system and method for servicing a pair of satellite wells with only two flowlines from the production platform. When one well of the pair is being serviced, the other well must be taken out of production to provide the required circulation flow path.

U.S. Patent No. 3,545,474 to W. Brown discloses a diverter to selectively direct a tool string from a common flowline to one of several wells connected to the common flowline. This patent does not disclose a system allowing continued production of the remaining wells while servicing the one well.

U.S. Patent No. 3,542,125 to P. S. Sizer discloses a system for producing from and servicing multiple underwater wells from a single production platform. However, this patent requires the underwater wells to be connected to wellheads supported on a single underwater platform. Frequently, it is not feasible to locate the well heads of all the satellite wells on a single platform.

U.S. Patent No. 3,602,302 to C. S. Kluth discloses a system for producing from and servicing multiple wells from a single platform, in this case a floating barge. As best shown in Figure 8, the patent requires two separate flowlines to join each satellite well to a central facility.

Otis Engineering Corporation *Pumpdown Completion Equipment & Servicing Catalog,* published January 1978 (OEC5113A), dicloses various pumpdown servicing tools and various well completion guides for utilization of pumpdown techniques. Pages 28 and 29 disclose a system for servicing a plurality of wells from two service lines. It does not disclose any system or method to allow continued production from the remaining wells while servicing one well in the system.

One object of the present invention is to provide a well producing and servicing system which minimizes the number and total length of flowlines required to connect satellite wells to a production platform.

Another object of the present invention is to provide a system and method to allow servicing of one well in a system while continuing to produce other wells in the system.

A further object of the present invention is to provide a method for testing one well in a system having a plurality of wells without having to interrupt production from the wells not being tested.

Still another object of the present invention is to provide a system for producing and servicing a plurality of wells with only three common flow conductors connecting all the wells in parallel to a single production platform.

The present invention provides a system selectively permitting production from and servicing of a plurality of wells, comprising a common production flowline connected to each well and to a production facility, a plurality of common service flowlines connected to each well and to a service facility, and control means selectively preventing communication between each well and the common production flowline and between each well and common service flowlines.

Reference is made to the drawings, in which:

Figure 1 is a view illustrating the common production flowline and two service lines connected in parallel from a production platform to one of a plurality of underwater wellheads;

Figure 2 is a plan view showing a production platform containing production facilitates and pumpdown servicing equipment connected to a plurality of wellheads in accordance with the present invention;

Figure 3 is a schematical view, partly in section, of a typical well having a single producing zone and equipped for carrying out the present invention;

Figure 4 is a schematical view, partly in section, of a typical well having two producing zones and equipped for carrying out the present invention;

Figure 5 is a schematical view, partly in section, of a well having a single production tubing string and a circulation line extending from the wellhead to the circulation point; and

Figure 6 is a schematical view, partly in section, of a well completion having a single production tubing string and using the annulus between the tubing and casing to provide a circulation flow path.

Referring to the drawings and particularly to Figure 1, a production platform 11 is shown connected to a subsea wellhead 12 by a common production flowline 13 and service flowlines 14 and 15.

Production platform 11 is shown as supported on the floor 16 of a body of water by support structure 17. Production platform 11 could also be on a floating vessel or a shore facility. Wellhead 12 is represented as a subsea wellhead but could be of any suitable type.

Production platform 11 provides production facilities 18 to receive, process, store and test formation fluids from wells connected to the system. Through-the-flowline (TFL) or pumpdown servicing equipment 19 is also provided on platform 11. For the purpose of this description, "flowline" generally means a conduit connecting a wellhead to the production platform. "Tubing string" generally refers to a flow conduit vertically disposed within a well providing fluid communication from a subsurface producing formation or zone to the wellhead.

In order to provide a satisfactory circulation flow path for pumpdown operations, each well in the system must have at least one tubing string disposed within the well casing. Preferably, two tubing strings are disposed within the well casing to minimize corrosive fluid contact with the well casing. As will be explained later, a satisfactory TFL circulation flow path can be established by using only one tubing string and a separate circulation line or the annulus between the tubing and casing.

In a preferred installation such as shown in Figure 3 for a well having only one producing formation, each tubing string individually communicates at a wellhead such as 12 with a branch flowline such as 20 or 21. Each branch flowline preferably has a five foot radius (minimum) bend adjacent the wellhead to allow passage of a tool string (not shown) through the flowline and into the production tubing. The end of the branch flowline away from the wellhead forms a "Y" with one portion connected to the common flowline 13 and the other portion connected to either service line 14 or 15 as shown in Figure 2. An isolation valve 22 is installed in the portion connecting branch flowline 20 to common production flowline 13. An isolation valve 24 is installed in the portion connecting branch flowline 20 with service line 14. For branch flowline 21, an isolation valve 23 is installed in the portion connecting branch flowline 21 to the common production flowline 13 and isolation valve 25 is installed in the portion connecting branch flowline 21 to service line 15. In most pumpdown serviced wells, a surface cross connect is preferably provided near the wellhead. At or near wellhead 12 an isolation valve 26 is shown in the surface cross connect between branch flowlines 20 and 21.

Referring to Figure 2, three wells are shown connected to a single production platform 11 although the present invention would allow any number of wells to be connected to the same platform with only three flowlines. The wells in the system are connected in parallel with the production facility 18 and pumpdown servicing equipment 19 by common flowline 13 and service flowlines 14 and 15. "Parallel" is used in this description and the claims to indicate that fluid can communicate from each well and the production facility or pumpdown servicing equipment without having to flow through another well in the system. Parallel does not indicate the spatial relationship of the flowlines. The flowlines may cross each other or diverge from each other when laid on the ocean floor. Wellheads 12*a* and 12*b* are the same as wellhead 12. Isolation valves 22*a*, 23*a*, 24*a*, 25*a* and 26*a* perform the same function with respect to wellhead 12*a* as the correspondingly numbered valves perform for wellhead 12. In the same manner, isolation valves 22*b*, 23*b*, 24*b*, 25*b*, and 26*b* perform the same function with respect to wellhead 12*b* as the correspondingly numbered valves perform for wellhead 12. Branch flowlines 20*a* and 20*b* correspond with branch flowline 20. Branch flowlines 21*a* and 21*b* correspond with branch flowline 21.

An important feature of the invention is that each production tubing string and branch flowline can be isolated individually from the common production flowline 13 and still communicate with one of the service lines 14 or 15. During operations when none of the wells in the system are being serviced, isolation valves 22, 23, 24 and 25 for each wellhead can be opened to allow maximum formation fluid flow from each well to the production platform 11. Also, services lines 14 and 15 could remain isolated from the wells in the system and the common production flowline. With service lines 14 and 15 isolated, they could be kept full of pumpdown fluids such as sea water.

Preferably valves 22, 23, 24, and 25 are located on the ocean floor near the associated wellhead if possible. Therefore, it is necessary to actuate these valves remotely from platform 11. The remote operation of such valves is well known. A description of such remotely operated valves satisfactory for use with the present invention as isolation valves can be found in Composite Catalog 1976—77, Volume I, page 1340 (Cameron Iron Works, Inc. "Fail Safe" Valves).

A diverter 32 is installed in service line 14 to join branch line 20 with service line 14. Diverter 32 can direct a tool string from service line 14 into branch line 20 or let it go past. Another diverter 33 can direct tool strings from service line 15 into branch line 21 or let it go past. Diverters 32 and 33 are preferably located on the ocean floor near the associated subsea wellhead. Each diverter has a remotely controlled operator 31 to allow remote positioning of the diverter member therein. U.S. Patent No. 3,758,072 discloses a diverter with a remote operator which is satisfactory for use with the present invention. Operator 31 can be either hydraulically, electrically or pneumatically operated.

Wellhead 12*a* is associated with diverters 32*a* and 33*a* corresponding respectively to diverters 32 and 33 for wellhead 12. The last wellhead in the system, wellhead 12*b* in Figure 2, does not require a diverter. Rather, the service lines 14 and 15 may be connected directly to the wellhead branch flowlines if desired.

The service lines 14 and 15 should preferably have an inside diameter compatible with the production tubing in each well. TFL or pumpdown tool strings can move from the service lines to the production tubing and back without restriction. The common production flowline should preferably be larger than the service lines to accommodate the total production flow from all of the wells.

On the production platform 11, common production flowline 13 is connected to the production facility 18. Service line 14 is connected to lubricator 34 and service line 15 to lubricator 35. In addition a T line 36 connects service line 14 to production facility 18 and T line 37 connects service line 15 to production facility 18. Isolation valve 42 installed in T line 36, isolates production facility 18 from service line 14. Isolation valve 41, installed in T line 37 isolates production facility 18 from service line 15.

Pumpdown servicing equipment 19 includes lubricators 34 and 35, flow control manifold 43, storage tank 44, fluid mixing tank 45 and pump 46. In Figure 2, lubricator 35 is shown partially cut away with a tool string 47 inserted in the lubricator. Pump 46 takes fluid from mixing tank 45 and discharges the fluid to flow control manifold 43. Manifold 43 directs the discharged fluid to either lubricator 34 or 35, depending upon which lubricator contains the tool string for insertion into the well. Manifold 43 receives return fluid from the well being serviced, through the opposite lubricator and directs the fluid to storage tank 44. Storage tank 44 is connected to mixing tank 45 to complete the fluid flow path.

Tool string 47 can be inserted into lubricator 35 by shutting stop valve 49, which connects lubricator 35 to service line 15, and by removing end fitting 51. A tool string could be placed in lubricator 34 by shutting stop valve 48, which connects lubricator 34 to service line 14, and by removing end fitting 52.

Figure 3 shows a typical well installation having only one producing formation (not shown) and suitable for use with the present invention. Casing 60 is installed within the well bore in the conventional manner. Wellhead 12 is supported by casing 60 at the well surface. Perforations 61 are formed in the wall of casing 60 adjacent the producing formation. Two production tubing strings 63 and 64 are disposed within casing 60 and supported at least partially by wellhead 12. Dual packer 66 seals between the lower end of each tubing string and the inner wall of casing 60 above perforations 61. Packer 66 directs formation fluid entering casing 60 from perforations 61 upward through production tubing strings 63 and 64 to the surface. An H-member or fluid cross connect 65 connects tubing 63 and 64 above packer 66. Since only one producing formation supplies formation fluid to both production tubing strings, cross connect 65 can be permanently open allowing fluid communication between tubing strings 63 and 64. Wellhead 12 connects tubing string 64 to branch flowline 20 and tubing string 63 to branch flowline 21.

The following steps are required to insert tool string 47 into production tubing 63 of well 12. Isolation valves 42 and 41 are shut to isolate service lines 14 and 15, respectively, from production facility 18. Stop valve 49 is shut to isolate lubricator 35 from service line 15. Manifold 43 is aligned to release pressure from lubricator 35. End fitting 51 can be removed after lubricator 35 is isolated and depressurized. After the desired tool string is placed within lubricator 35, end fitting 51 is installed and stop valve 49 opened. Manifold 43 is aligned to direct fluid discharged from pump 46 into lubricator 35 and to return fluid from lubricator 34 into storage tank 44. Isolation valves 22 and 23 are shut to isolate production tubing strings 64 and 63 respectively from the common production flowline 13. Isolation valves 24*a*, 25*a*, 24*b*, and 25*b* are shut to isolate wellheads 12*a* and 12*b* from service lines 14 and 15. However, isolation valves 22*a*, 23*a*, 22*b*, and 23*b* can remain open with wellheads 12*a* and 12*b* continuing to discharge formation fluid into common production flowline 13. Isolation valves 24 and 25 are opened or checked open to insure a fluid flow path from service lines 14 and 15 to branch flowlines 20 and 21, respectively. Diverter 33 is positioned to direct tool string 47 from service lines 15 into branch flowline 21. If desired, isolation valves 26 on the ocean floor could be opened to establish a surface cross connect flow path between branch flowline 20 and 21. However, isolation valve 26 must be shut when a tool string is inserted into the production tubing. For most well servicing, permanently open cross connect 65 installed downhole between production tubing strings 64 and 63 will provide sufficient circulation flow. With the flow path aligned as previously stated, pressurized fluid from pump 46 is used to move tool string 47 into production tubing string 63

while continuing to produce formation fluid from the other wells in the system.

If it is desired to inject chemicals or special fluids into tubing string 63, the same operating sequence would be followed except the chemicals or special fluid would be placed in mixing tank 45, lubricator 35 would not have to be loaded with a tool string, and diverter 33 would not have to be specially positioned.

The present invention provides considerable flexibility as to the operations which can be performed on one well while continuing to produce from the remaining wells in the system. The two service lines can be used to inject acid or other treating fluids into a selected formation. The service lines can be aligned to allow production testing of a selected well or producing formation without interrupting production from the other wells. The common production flowline 13 can be cleaned out or "pigged" by opening isolation valves 23*b* and 25*b*. A circulation flow path from production facility 18 through common flowline 13, isolation valves 23*b* and 25*b* with return through service line 15 would make such maintenance possible. Also, service lines 14 and 15 can be used to place killing fluids in a well and to displace such fluids when a well is to be placed into production.

Frequently, well bores will penetrate more than one hydrocarbon producing formation. Most regulatory bodies require that the formation fluids from different producing formations should not be mixed within the well bore. To prevent fluid commingling, each hydrocarbon formation is frequently produced through a separate production tubing string disposed within the well casing. In order for pumpdown servicing techniques to be compatible with producing from more than one formation, an H-member, having a downhole circulation control means to selectively allow fluid communication between the production tubing strings, must be initially installed intermediate the ends of the tubing strings during the well completion. Examples of H-members having downhole circulation control means are shown in Otis Engineering Corporation, *Pumpdown Completion Equipment & Servicing Catalog,* published January 1978, (OEC5113A) on page 13.

Figure 4 is a schematic representation of one downhole circulation control means satisfactory for use with the present invention. Well casing 60 is installed within a well bore penetrating two producing formations or zones. Perforations 70 in casing 60 allow production fluids from the upper formation to flow into the well casing. Perforations 71 in casing 60 below perforations 70 allow production fluids from the lower formation to flow into the well casing. Wellhead 12, attached to the upper end of the casing 60, supports two tubing strings 72 and 73 disposed within casing 60. Wellhead 12 connects tubing string 72 to branch flowline 20 and tubing string 73 to branch flowline 21. Tubing string 73 is commonly referred to as the long string because it allows fluid communication from the lower formation to the well surface. Tubing string 72 is commonly referred to as the short string because it allows fluid communication between the upper formation and the well surface. A single packer 75 forms a fluid tight seal between the inner wall of casing 60 and tubing string 73. Therefore, production fluids entering through perforations 71 are directed by packer 75 to flow upward through tubing string 73. Packer 75 also prevents production fluids entering casing 60 through upper perforations 70 from mixing with production fluids below packer 75. A dual packer 75 is installed within the casing 60 above the upper perforations 70. Dual packer 76 forms a fluid tight seal between the inner wall of casing 60 and tubing strings 72 and 73. The lower end of tubing string 72 terminates between packer 76 and 75. Packer 76 directs production fluids entering casing 60 from upper perforations 70 to flow to the well head through tubing string 72.

A standing valve 78 is installed within the lower end of tubing string 72. Standing valve 77 is installed within the lower end of tubing string 73. As will be explained later, standing valve 78 is used to open the downhole circulation control means 80 shown in Figure 4. Standing valves 77 and 78 are represented as ball check valves which allow production fluids to flow upward through the respective tubing strings when production fluid pressure below the standing valve is higher than fluid pressure within the tubing string above the respective standing valve. Therefore, if a pump at the well surface discharged fluid into tubing 72 at a pressure higher than formation pressure, standing valve 78 would shut preventing high pressure fluid within tubing string 72 from flowing out the lower end thereof.

A downhole circulation control means 80 is connected into the two tubing strings above the dual packer 76. Control means 80 includes an H-member 81 having one leg 85 connected to tubing string 73 and the other leg 84 connected to tubing string 72. When control means 80 is open, fluid can communicate freely from tubing string 73 to tubing 72 through the lateral flow passage of the H-member 81. Tubing string 72 has a bypass passage 82 allowing fluid communication around H-member 81 without the fluid having to flow through leg 84 of H-member 81 connected to tubing string 72. Tubing string 73 has a bypass passageway 83 allowing both fluid communication around H-member 81 and flow through leg 85 of Hmember 81 connected to tubing string 73.

An isolation valve 90 is installed within leg 84 of H-member 81 to control flow through the lateral flow passage of the H-member. Isolation valve 90 includes a pressure dome 91 which biases plunger 92 downward. With isolation valve 90 installed, fluid communication through the upper portion of leg 84 above the cross connect to leg 85 is prohibited. The lower portion of leg 84 below the cross connect to leg 85 carries seat means 93. When plunger 92 is fully moved

downward by dome 91, the lower end of plunger 2 engages seat means 93 to prevent fluid flow through the cross connect. Therefore, when isolation valves 90 is installed within leg 84, fluid cannot normally communicate between tubing string 72 and 73 through H-member 81.

When pumpdown servicing of either tubing string 72 or 73 is required, manifold 43 is aligned to discharge pumped fluid through the appropriate service line 14 or 15. When the pump discharge causes pressure within tubing string 72 or 73 to exceed the associated formation fluid pressure, either standing valve 78 or 77 will seal depending upon which tubing string the pump is discharging into. With the standing valve shut, pump 46 can increase the pressure within the tubing string to overcome the downward bias of dome 91 on plunger 92. As tubing pressure continues to increase, plunger 92 is lifted out of engagement with seat means 93 establishing free fluid communication between tubing string 72 and 73 through H-member 81. With plunger 92 lifted from seat means 93, downhole circulation control means 80 is opened providing a circulation flow path for pumpdown servicing of tubing strings 72 and 73. The lower portion of plunger 92 is slightly tapered so that increasing the pressure in tubing string 73 will result in an upward force against the pressure in dome 91.

Referring to Figure 5, some well installations have only a single production tubing string 100 installed within the well casing 60. A single production tubing string allows cost saving by requiring only a single packer 104 to seal between the tubing 100 and casing 60.

Referring to Figure 5, circulation line 102 extends from wellhead 12 to the circulation point in tubing 100. Circulation line 102 is sized to provide adequate flow for pumpdown operations. Landing nipple 103, having an internal profile for receiving pumpdown tools, is installed within tubing string 100. The circulation point is above the internal profile in landing nipple 103.

There are many ways to establish an adequate downhole circulation flow path for pumpdown operations. U.S. Patent No. 3,664,427 to T. M. Deaton and U.S. Patent No. 3,680,637 to G. M. Raulins disclose various types of H-members and circulation control means which are suitable for use in the present invention.

Referring to Figure 6, a well installation is shown using the annulus 101 between casing 60 and production tubing string 100 to complete the pumpdown circulation flow path. Wellhead 12 supports tubing 100 within casing 60. Single packer 104 seals between the lower portion of tubing 100 and casing 60 to isolate the annulus thereabove from well fluid. Wellhead 12 contains a dual wellhead, of which one portion is connected to tubing 100 and the other side of which allows fluid communication between branch flowline 20 and annulus 101. A selective circulating tool 105 is installed within tubing 100 above packer 104. Circulating tool 105 is preferably a sleeve valve which can be alternatively opened and shut to control fluid communication between annulus 101 and the bore of tubing 100. A satisfactory circulation tool for use in a well installation such as Figure 6 is the Sliding Side-Door Sleeve Valve as shown in the Otis *Pumpdown Completion Equipment & Services Catalog* (OEC5113A), published January 1978, on page 21.

The present invention can be used with various types of well installations. Figures 3, 4, 5 and 6 show only four general types of installations. The previous description is illustrative of only some of the embodiments of the invention. Those skilled in the art will readily see other variations for a system providing production and servicing of multiple wells with only a common production flowline and at least two service lines. Changes and modifications may be made without departing from the scope of the invention as defined in the claims.

Claims

1. A system selectively permitting production from and servicing of a plurality of wells, comprising a common production flowline connected to each well and to a production facility, a plurality of common service flowlines connected to each well and to a service facility, and control means selectively preventing communication between each well and the common production flowline and between each well and the common service flowlines.

2. A system according to claim 1, wherein each well has a least one production tubing string disposed therein, and the common production flowline is connected to the production tubing string of each well, means are provided selectively permitting communication between the production tubing string of each well and one of the service lines; and means are provided for establishing a circulation flow path through the production tubing string of each well and another service line.

3. A system according to Claim 2, further comprising a single production platform providing production facilities connected to the common flowline and pumpdown servicing equipment connected to the service lines.

4. A system according to Claim 2 or 3, wherein the control means comprises a diverter in each service line to direct tools from the service line to the selected tubing string, and a valve to isolate the production tubing string of each well from the respective service line.

5. A system according to Claim 2, 3 or 4, wherein the means for establishing a circulation flow path comprises a circulation tool installed intermediate the ends of the production tubing string.

6. A system according to any of Claims 2 to 5, wherein the means for establishing a circulation flow path comprises a circulation line connecting the production tubing string and the other service line.

7. A system according to any preceding

Claims, wherein said service facility includes a source of fluid pressure, and lubricator means is provided in at least one of said service flowlines near said source of fluid pressure for inserting pumpdown tools into the service flowline for movement therethrough and into a selected well to perform operations in said well.

8. A system according to any preceding Claim, wherein a pair of production conduits connects each well to said common production flowline and a lateral conduit interconnects said pair of production conduits near each well, whereby fluids may be circulated through said system substantially as far as the well but without moving through said well.

9. A system according to any preceding Claim, wherein each of the service flowlines is connected to the production facility permitting each well to produce through all of the flowlines simultaneously.

10. A system according to any preceding Claim wherein each well has at least two production tubing strings disposed therein, and a common production flowline is connected to the production tubing strings of each well, at least two service lines are connected in parallel with the production flowline, and means are provided selectively permitting communication between each production tubing string of each well and one of the service lines.

11. A system according to any preceding Claim, wherein the wells are underwater wells, the service facility comprises pumpdown servicing equipment, and the production and service facilities are located on a single production platform.

12. A system selectively permitting production from and servicing of a plurality of wells, substantially as described with reference to the drawings.

13. A method of servicing a selected one of a plurality of wells, each having at least one production tubing string disposed therein, each tubing string being connected to a common production flowline and to one of two service lines, which comprises, isolating the production tubing string to be serviced from the common production flowline, isolating the production tubing strings of ths other wells from the service lines, and opening communication from the service lines to the production tubing string of the well to be serviced.

14. A method according to Claim 13, further comprising positioning a diverter in one of the service lines to direct a tool string to the production tubing string of the well to be serviced.

15. A method according to Claim 13 or 14, further comprising opening a downhole circulation control means to provide fluid communication between the production tubing string of the well to be serviced and the service lines whereby a pumpdown circulation flow path is established.

16. A method of servicing a selected one of a plurality of wells, substantially as described with reference to the drawings.

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